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An Natural Hybrid-Mixed Model with Shear Projection for Curved Shells

Rezak Ayad

University of Reims, Reims, France

A new natural hybrid-mixed variational approach, applied to a degenerated 4-node shell finite element, is presented. The membrane part is natural hybrid with an improved stress field. The bending part is mixed based on the classical Hellinger-Reissner principle. The transverse shear part is partially hybrid with the satisfaction of two 3D-equilibrium equations. To eliminate the shear locking, the Assumed Natural Strain method is used for approximating shear strains. The results of a pinched cylinder are presented.

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